



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,660	07/02/2001	Charles J. Schaeffer	054821-0116	504241

26371 7590 12/29/2003

FOLEY & LARDNER
777 EAST WISCONSIN AVENUE
SUITE 3800
MILWAUKEE, WI 53202-5308

EXAMINER

YUAN, DAH WEI D

ART UNIT	PAPER NUMBER
----------	--------------

1745

DATE MAILED: 12/29/2003

18

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/898,660

Applicant(s)

SCHAEFFER ET AL

Examiner

Dah-Wei D. Yuan

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39,41-52,55-58 and 127-139 is/are pending in the application.
- 4a) Of the above claim(s) 127-139 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 44 and 45 is/are allowed.
- 6) ☒ Claim(s) 39,41-43,46-52 and 55-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13,15.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

BATTERY WITH GRID

Examiner: Yuan

S.N. 09/898,660

Art Unit: 1745

December 22, 2003

Detailed Action

1. The Applicant's amendment filed on October 2, 2003 was received. Claims 40,53,54 were cancelled. Claims 39,41,42,44,45,52,55,58 were amended. Claims 127-139 were added.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action (Paper No. 10).

Election/Restrictions

3. Newly submitted claims 127-139 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The newly added claims 127-139, which directed to a method of producing a battery, is a patentably distinct species of the claimed invention Group I. Applicant has previously elected Group I-1, claims 39-58, in Paper No. 9 for prosecution.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 127-139 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Specification

4. The continuation of application filed on 7/2/01 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no continuation of application shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The recitation “applying a torsional stress to the wire at the position intermediate the opposed ends of the wire” in claim 41 is not supported in the originally filed application.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

5. The claim rejections under 35 U.S.C. 112, first paragraph, on claims 41,46-52 are maintained. The rejection is repeated below for convenience.

Claims 41,46-52 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitation “applying a torsional stress to the wire at the position intermediate the opposed ends of the wire” in claim 41 is not disclosed or discussed in the instant specification. Instead, the specification only discloses the use of three methods, including stamping process, continuous casting and strip expansion process, to fabricate the battery grids.

Claim Rejections - 35 USC § 103

6. The claim rejections under 35 U.S.C.103(a) as being unpatentable over Wirtz et al. in view of Misra et al. as evidenced by Rao on claims 39,55-58 are maintained.

With respect to claim 39, Wirtz et al. teach a production line to make positive and negative grids of a battery. The method comprises the formation of a web (24) of a plurality of interconnected successive grid blank (26), which is continuously cast from a molten lead composition by a continuous casting machine. Figure 4 shows the battery grid including a network of a plurality of spaced apart grid elements (202). The grid elements are joined by one of a plurality of nodes (206). The web is reduced in cross section and elongated in the direction of travel by a series of compression roller machines. Subsequently, an electrochemically active paste is applied to the reduced web as it passes through the pasting machine. The pasted web is advanced by a powered belt conveyor into the cutting machine, which cuts the web (24) into individual pasted plate. See Column 3, Line 61 to Column 4, Line 4; Column 5, Lines 60-61; Column 6, Lines 10-12. However, Wirtz et al. do not teach a first transverse cross section of the grid element is different from a second transverse cross section of the opposed grid element. Misra et al. teach a method to fabricate battery grid for a lead acid battery, wherein grid (88) includes an outer peripheral member (220,222) and intermediate members (224,226). See Figure 14. Misra et al. disclose the longitudinally and vertically extending elongated members 224, 226 having diamond and triangular cross-sectional areas, respectively. Also, the outer peripheral members (220,222) are preferably of generally hexagonal cross section. See Figure 21. Misra et al. also conclude that polygonal cross-section of various members provides enhanced paste

adherence to the grid over that achieved if circular cross-section members are used. The diamond and triangular shapes of elongated paste support members (224,226) provides good adherence between the active material paste and the grid. See Column 18, Lines 55-61; Column 19, Lines 5-25; 49 to Column 20, Line 5. Therefore, it would have been obvious to one of ordinary skill in the art to modify the cross-sectional area of the grid elements in the method of making a battery of Wirtz et al., because Misra et al. teach the resulting paste adherence to the battery grid can be enhanced if difference cross-sections, such as hexagonal and diamond, are employed at the opposed ends of the grid element. Also, it is well know in the battery art that the conductive grid is also used as a current collector for the battery. This is supported in Rao (US 5,958,625). See Column 1, Lines 16-19.

With respect to claim 55, the battery grid is reduced in cross section and elongated in the direction of travel by a series of compression (deformation) roller machines. See Column 4, Lines 2-4.

With respect to claim 56, the pasted plates as described above are assembled in a battery cell (510) as shown in Figure 20.

With respect to claim 57, a diluted sulfuric acid is used as the electrolyte in the battery. See Column 10, Lines 51-54.

With respect to claim 58, the web contains a lug as shown in the top portion of Figure 4.

7. The claim rejections under 35 U.S.C.103(a) as being unpatentable over Wirtz et al. in view of Misra et al. and Kao et al. on claims 42,43 are maintained.

With respect to claim 42, Wirtz et al. and Misra et al. disclose a method of making a battery as described above in Paragraph 6. However, Wirtz et al. and Misra et al. do not disclose forming at least a portion of the grid by stamping. Kao et al. disclose a grid made by stamping, or punching the grid from a continuous sheet of lead material wherein the sheet may be formed by a continuous casting process or a rolling process. The grid shapes likely result from a progressive punching operation, i.e., features will be added to the grid through several punching operations. The punched strip is processed to add active material (paste) and a paper layer, and then the strip is cut onto individual grids. Kao et al. also teach that the battery grid formed by a stamping process has improved corrosion and electrical performance over those grids made by other processes. See Page 4, Lines 16-18; Page 5, Lines 4-10. Therefore, it would have been obvious to one of ordinary skill in the art to incorporate a stamping process in the fabrication of the grid elements into the method of Wirtz et al. and Misra et al., because Kao et al. teach the battery grid made by stamping process has better corrosion and electrical performance.

With respect to claim 43, Wirtz et al. teach the transverse cross section of the grid element can have different shapes, such as hexagon, triangle or diamond. See Figure 21.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed.

Art Unit: 1745

Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 39,42,43,55 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 6,274,274 B1.

Although the conflicting claims are not identical, they are not patentably distinct from each other. The instant application claims a method of making a battery, including battery plates, by forming a strip of interconnected grids, and forming at least a portion of the grid elements.

While the '274 patent claims a method of making a plurality of battery plates comprising forming a strip of interconnected battery grids and deforming at least a portion of the grid wire element. The claims of the instant application encompasses the claims of the '274 patent.

Allowable Subject Matter

10. Claims 44,45 are allowed. The following is a statement of reasons for the indication of allowable subject matter: The invention of independent claim 44 recites a method of making a battery comprising forming a strip of interconnected grids from a grid material, forming at least a portion of the grid of the grid elements, applying paste to the strip, cutting the strip to form a plurality of plates, wherein forming at least a portion of the grid elements comprises stamping the grid element, wherein a first transverse cross-section substantially has a shape selected from the group comprising diamond, oval, rhomboid, hexagon, and octagon and wherein the network and each of the frames define opposed substantially planar surfaces, and each first transverse cross-section does not extend beyond the planar surfaces. The closest prior arts of record, Wirtz et al. and Misra et al., do not teach or suggest the first transverse cross-section does not extend beyond the planar surfaces of the frames in the battery grid as stated in the claim. The invention of independent claim 45 recites a method of making a battery comprising forming a strip of interconnected grids from a grid material, forming at least a portion of the grid of the grid elements, applying paste to the strip, cutting the strip to form a plurality of plates, wherein the network and each of the frames define opposed substantially planar surfaces, and each second transverse cross-section does not extend beyond the planar surfaces. The closest prior arts of record, Wirtz et al. and Misra et al., do not teach or suggest the second transverse cross-section does not extend beyond the planar surfaces of the frames in the battery grid as stated in the claim.

Response to Arguments

11. Applicant's arguments filed on October 2, 2003 have been fully considered but they are not persuasive.

Applicant's principle arguments are

(a) One of ordinary skill in the art would appreciate that a "a stamping die" that is used to "rotate the intermediate portion of the grid wire elements" necessarily applies a torsional stress to the grid wire elements;

(b) further modification is required to transform the combination of Wirtz et al. and Misra et al. to the "method of making a battery" recited in the claim.

In response to Applicant's arguments, please consider the following comments.

(a) Typically, the upper portion is precisely aligned and is vertically moveable with respect to the lower portion in a standard stamping die. The unidirectional movement of the dies introduces compressive stresses in the workpiece. On the other hand, the torsional stress is associated with torque-caused operational stress. It is not clear how the stamping die would apply a torsional stress to the grid wire elements,

(b) Both Misra et al. and Wirtz et al. disclose the use of a battery grid in a lead-acid battery, which is the subject matter of the instant disclosure. Misra et al. teach a lead-acid battery comprising a case, positive and negative plates, microporous separators and electrolyte. See Abstract. Wirtz reference teaches a similar lead-acid battery as shown in Figure 20.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (703) 308-0766. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Art Unit: 1745

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Dah-Wei D. Yuan
December 23, 2003


CAROL CHANEY
PRIMARY EXAMINER